

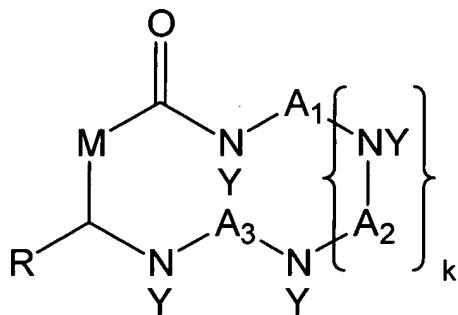
AMENDMENTS

In the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of claims:

Claim 1. (Original): A compound of the formula



wherein A₁, each A₂ (if present), and A₃ are independently selected from C₁-C₈ alkyl;

wherein each Y is independently selected from H or C₁-C₄ alkyl;

wherein M is selected from C₁-C₄ alkyl;

wherein k is 0, 2, or 3;

and wherein R is selected from C₁-C₃₂ alkyl;

and all stereoisomers and salts thereof.

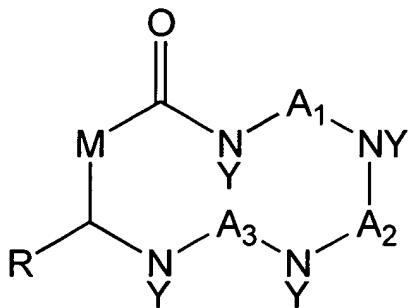
Claim 2. (Original): A compound according to claim 1, wherein each Y group is -H.

Claim 3. (Original): A compound according to claim 1, wherein each Y group is -CH₃.

Claim 4. (Original): A compound according to claim 1, wherein A₁, each A₂ (if present), and A₃ are independently selected from C₂-C₄ alkyl.

Claim 5. (Original): A compound according to claim 1, wherein M is -CH₂-.

Claim 6. (Original): A compound of the formula



wherein A₁ and A₃ are independently selected from C₁-C₈ alkyl;

wherein A₂ is independently selected from C₁-C₃ alkyl or C₅-C₈ alkyl;

wherein each Y is independently selected from H or C₁-C₄ alkyl;

wherein M is selected from C₁-C₄ alkyl;

and wherein R is selected from C₁-C₃₂ alkyl;

and all stereoisomers and salts thereof.

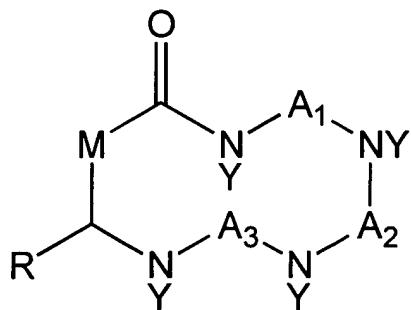
Claim 7. (Original): A compound according to claim 6, wherein each Y group is -H.

Claim 8. (Original): A compound according to claim 6, wherein each Y group is -CH₃.

Claim 9. (Original): A compound according to claim 6, wherein A₁ and A₃ are independently selected from C₂-C₄ alkyl, and A₂ is selected from the group consisting of C₂-C₃ alkyl and C₅ alkyl.

Claim 10. (Original): A compound according to claim 6, wherein M is -CH₂-.

Claim 11. (Currently amended): A compound of the formula



wherein A₁ and A₃ are independently selected from C₁-C₈ alkyl;

wherein A₂ is independently selected from C₁-C₈ alkyl;

~~wherein each Y is independently selected from H or C₂-C₄ alkyl;~~

wherein each Y is independently selected from C₂-C₄ alkyl;

wherein M is selected from C₁-C₄ alkyl;

and wherein R is selected from C₁-C₃₂ alkyl;

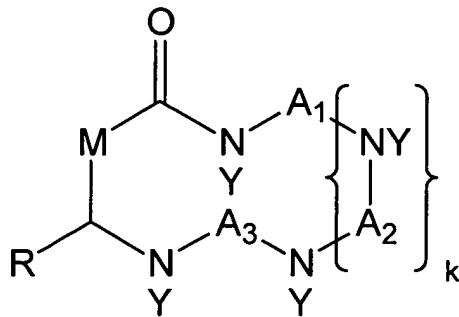
and all stereoisomers and salts thereof.

Claim 12. (Original): A compound according to claim 11, wherein each Y group is -H.

Claim 13. (Original): A compound according to claim 11, wherein A₁ and A₃ are independently selected from C₂-C₄ alkyl, and A₂ is selected from the group consisting of C₂-C₅ alkyl.

Claim 14. (Original): A compound according to claim 11, wherein M is -CH₂-.

Claim 15. (Withdrawn): A method of synthesizing a compound of the formula



wherein A₁, each A₂ (if present), and A₃ are independently selected from C₁-C₈ alkyl; wherein each Y is independently selected from H or C₁-C₄ alkyl;

wherein M is selected from C₁-C₄ alkyl;

wherein k is 0, 2, or 3;

and wherein R is selected from C₁-C₃₂ alkyl;

comprising the steps of:

reacting an ω -halo alkyl alkanoate with an aldehyde or ketone-containing compound to give an alkene-containing alkanoate compound;

reacting the alkene-containing alkanoate compound with a compound containing two primary amino groups and optionally containing secondary amino groups to effect addition of one of the amino groups across the double bond;

cyclizing the other amino group with the alkanoate group to form an amide bond; and optionally alkylating the secondary amino groups if present.

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Claim 16. (Withdrawn): The method of claim 15, wherein the ω -halo alkyl alkanoate is ethyl bromoacetate.

Claim 17. (Withdrawn): The method of claim 16, wherein the aldehyde or ketone-containing compound is an aldehyde-containing compound.

B Claim 18. (Withdrawn): The method of claim 16, wherein the step of reacting an ω -halo alkyl alkanoate with an aldehyde or ketone-containing compound to give an alkene-containing alkanoate compound is performed by reacting the ω -halo alkyl alkanoate with triphenylphosphine.

Claim 19. (Withdrawn): The method of claim 16, wherein the compound containing two primary amino groups is selected from the group consisting of $H_2N-A_1-(NH-A_2)_k-NH-A_3-NH_2$ wherein A_1 , each A_2 (if present), and A_3 are independently selected from C_1-C_8 alkyl and k is 0, 2, or 3.

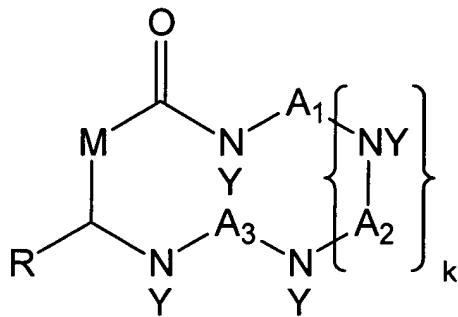
Claim 20. (Withdrawn): The method of claim 19, wherein the compound containing two primary amino groups is selected from the group consisting of spermine, spermidine, and putrescine.

Claim 21. (Withdrawn): The method of claim 16, wherein the step of cyclizing the other amino group with the alkyl alkanoate group to form an amide bond is performed by reacting the compound with antimony (III) ethoxide.

Claim 22. (Withdrawn): The method of claim 16, wherein the step of optionally alkylating any secondary amino groups if present is performed by reacting the compound first with an aliphatic aldehyde to result in a Schiff base, then reducing the Schiff base, resulting in alkylation of the secondary amino groups.

Claim 23. (Withdrawn): The method of claim 22, wherein the step of reducing the Schiff base is performed by using the reagent $NaCNBH_3$.

Claim 24. (Withdrawn): A method of synthesizing a compound of the formula



wherein A_1 is C_3 alkyl, and each A_2 (if present) and A_3 are independently selected from C_1 - C_8 alkyl;

wherein each Y is independently selected from H or C_1 - C_4 alkyl;

wherein M is selected from C_1 - C_4 alkyl;

wherein k is 0, 2, or 3;

and wherein R is selected from C_1 - C_{32} alkyl;

comprising the steps of:

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condensing a compound comprising a primary amino group and a hexahydropyrimidine moiety with an α,β -unsaturated ester compound such that the primary amino group adds at the β -position of the unsaturated ester compound, whereby the primary amino group is converted to a secondary amino group;

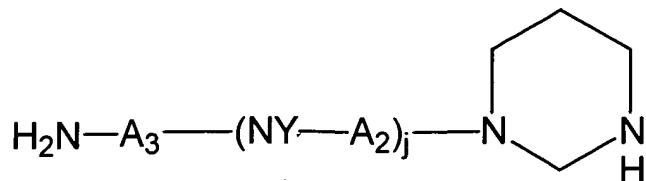
cleaving the methylene bridge of the hexahydropyrimidine moiety to generate a secondary amino group and a newly-generated primary amino group; and

condensing the newly-generated primary amino group with the ester group to form an amide group.

Claim 25. (Withdrawn): The method of claim 24, wherein the α,β -unsaturated ester is of the formula

$(C_1-C_8 \text{ alkyl})-\text{O}-\text{C}(=\text{O})-\text{CH}=\text{CH}- (C_1-C_{32} \text{ alkyl}).$

Claim 26. (Withdrawn): The method of claim 24, wherein the compound comprising a primary amino group and a hexahydropyrimidine moiety is of the formula



wherein each A₂ (if present) and A₃ are independently selected from C₁-C₈ alkyl;
wherein each Y is independently selected from H or C₁-C₄ alkyl; and
wherein j is 0, 2, or 3.

Claim 27. (Withdrawn): The method of claim 26, wherein j is 0.

Claim 28. (Withdrawn): The method of 27, wherein A₃ is C₄ alkyl.

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Claim 29. (Withdrawn): The method of 24, wherein the step of cleaving the methylene bridge of the hexahydropyrimidine moiety is performed with anhydrous HCl in an alcoholic solvent.

Claim 30. (Withdrawn): The method of 24, wherein the step of condensing the newly-generated primary amino group with the ester group to form an amide group is performed with the reagent B(N(CH₃)₂)₃.

Claim 31. (Withdrawn): A method of treating cancer or a disease characterized by uncontrolled cell proliferation in an individual in need of such treatment,
comprising the step of administering one or more compounds of claim 1.

Claim 32. (Withdrawn): A method of treating cancer or a disease characterized by uncontrolled cell proliferation in an individual in need of such treatment,
comprising the step of administering one or more compounds of claim 6.

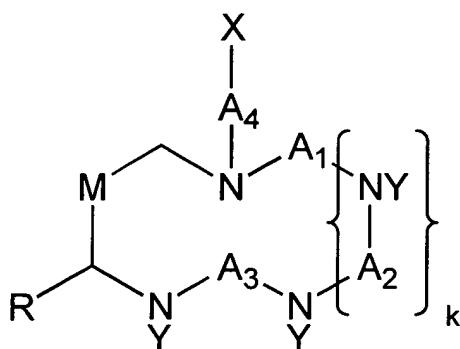
Claim 33. (Withdrawn): A method of treating cancer or a disease characterized by uncontrolled cell proliferation in an individual in need of such treatment, comprising the step of administering one or more compounds of claim 11.

Claim 34. (Withdrawn): A method of depleting ATP in a cancerous cell, comprising the step of administering one or more compounds of claim 1 to the cell.

Claim 35. (Withdrawn): A method of depleting ATP in a cancerous cell, comprising the step of administering one or more compounds of claim 6 to the cell.

Claim 36. (Original): A method of depleting ATP in a cancerous cell, comprising the step of administering one or more compounds of claim 11 to the cell.

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Claim 37. (Original): A compound of the formula



wherein A₁, each A₂ (if present), and A₃ are independently selected from C₁-C₈ alkyl;
wherein A₄ is selected from C₁-C₈ alkyl or a nonentity;

X is selected from -H, -Z, -CN, -NH₂, -C(=O)-C₁-C₈ alkyl, or -NHZ, with the proviso that when A₄ is a nonentity, X is -H, -C(=O)-C₁-C₈ alkyl, or -Z;

Z is selected from the group consisting of an amino protecting group, an amino capping group, an amino acid, and a peptide;

wherein each Y is independently selected from H or C₁-C₄ alkyl;
wherein M is selected from C₁-C₄ alkyl;
wherein k is 0, 1, 2, or 3;
and wherein R is selected from C₁-C₃₂ alkyl;
and all stereoisomers and salts thereof.

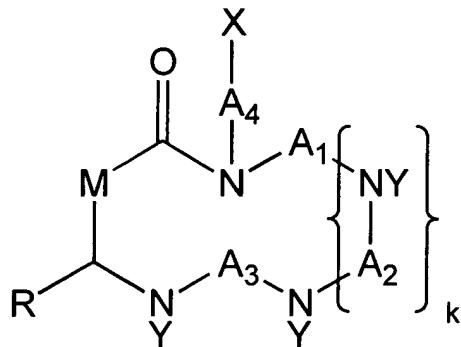
Claim 38. (Original): The compound of claim 37, wherein A₄ is a nonentity, X is -Z, -Z is -H, and each Y is -CH₃.

Claim 39. (Original): The compound of claim 38, wherein M is -CH₂-, k is 1, A₁ and A₃ are -CH₂CH₂CH₂-, and the single A₂ group is -CH₂CH₂CH₂CH₂-.

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Claim 40. (Original): The compound of claim 39, wherein R is -C₁₃H₂₇.

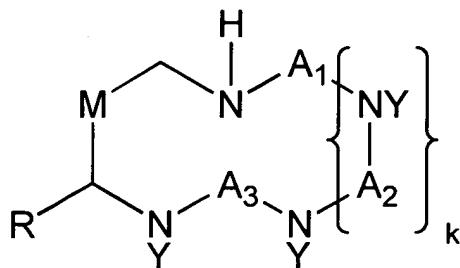
Claim 41. (Original): The compound of claim 37, wherein A₄ is C₁-C₈ alkyl, X is -NHZ, and Z is selected from one of the 20 genetically encoded amino acids, a peptide of the formula acetyl-SKLQL-, a peptide of the formula acetyl-SKLQ-β-alanine-, or a peptide of the formula acetyl-SKLQ-.

Claim 42. (Withdrawn): A method of synthesizing a compound of claim 37, wherein A₄ is a nonentity and X is -H, comprising reducing the carbonyl of the amide group of a compound of the formula



wherein A₄ is a nonentity and X is -H.

Claim 43. (Withdrawn): A method of synthesizing a compound of claim 37, wherein A₄ is C₂ alkyl, each Y is selected from C₁-C₄ alkyl, and X is -CN, comprising reacting a compound of the formula



wherein each Y is selected from C₁-C₄ alkyl,
with a compound of the formula H₂C=CH-CN.

Claim 44. (Withdrawn): A method of synthesizing a compound of claim 37, wherein A₄ is C₃ alkyl and X is -NH₂, comprising reducing the nitrile group of a compound of the formula

